WASHINGTON STATE
DEPARTMENT OF
ECOLOGY

STATEMENT OF BASIS
FOR
PHASE II ACID RAIN PERMIT
NO. 02AQCR-4524 FOURTH REVISION
FOR
GOLDENDALE ENERGY CENTER
KLICKITAT COUNTY, WASHINGTON

PREPARED BY:
WASHINGTON STATE DEPARTMENT OF ECOLOGY
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NOVEMBER 19, 2004

TABLE OF CONTENTS

1.0 LIST OF ABBREVIATIONS

CEMS	continuous emission monitoring system
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
GEC	Goldendale Energy Center
kW	kilowatt
HRSG	heat recovery steam generator
MW	megawatt
NOC	Notice of Construction
NO_X	oxides of nitrogen
NSPS	new source performance standard
O_2	oxygen
PM_{10}	particulate matter with an aerodynamic diameter of 10 micrometers or less
SCR	selective catalytic reduction
SO_2	sulfur dioxide
VOC	volatile organic compound
WAC	Washington Administrative Code

2.0 GENERAL INFORMATION

Company Name:	Goldendale Energy Center, LLC
Plant Name:	Goldendale Energy Center
ORIS Code:	55482
Source Location:	City of Goldendale Klickitat County, Washington SE ¼ of SW ¼ & SW ¼ of SE ¼ Section 20, T 4 N, R 16 E, WM
Designated Representative:	Steve Royall Plant Manager PO Box 190 600 Industrial Way Goldendale, WA 98620 Phone: 509-773-1200 Fax: 509-773-1224 Email: stever@calpine.com
Alternate Designated Representative:	Wayne Milke PO Box 190 600 Industrial Way Goldendale, WA 98620 Phone: 509-773-1209 Fax: 509-773-1224 Email: Wmilke@calpine.com

Basis for Acid Rain Program Applicability:
This unit is a new utility unit, per 40 CFR 72.6(a)(3).

Attainment Classification:
This affected source is located in an area that is unclassified for all criteria pollutants.

Timeline
February 28, 2001 – Ecology received complete Phase II Permit Application and Certificate of Representation
May 21, 2001 – Ecology received revised Certificate of Representation
March 25, 2002 – Ecology issued Draft Phase II Acid Rain Permit
April 24, 2002 – Ecology received revised Certificate of Representation
May 20, 2002 – Ecology issued Proposed Phase II Acid Rain Permit
July 15, 2002 – Ecology issued Final Phase II Acid Rain Permit No. 02AQCR-4524
April 16, 2003 – Ecology received request for Administrative Amendment (change alternate designated representative & new unit commence operation date)

June 11, 2003 – Ecology issued Final Phase II Acid Rain Permit No. 02AQCR-4524 First Revision
October 24, 2003 – Ecology received request for Administrative Amendment (change company name from Calpine Corporation to Goldendale Energy Center, LLC)
November 25, 2003 – Ecology issued Final Phase II Acid Rain Permit No. 02AQCR-4524 Second Revision
July 10, 2004 – Affected Unit achieved first fire ("commenced operation")
August 9, 2004 – Affected Unit sold first power ("commenced commercial operation")
September 2, 2004 – Ecology received request for Administrative Amendment (new unit commence operation date)
September 2, 2004 – Ecology issued Final Phase II Acid Rain Permit No. 02AQCR-4524 Third Revision
September 20, 2004 – Ecology received request for Administrative Amendment (change alternate designated representative)
November 19, 2004 – Ecology issued Final Phase II Acid Rain Permit No. 02AQCR-4524 Fourth Revision

3.0 INTRODUCTION

This document sets forth the legal and factual basis for the permit conditions in a REVISED Acid Rain Permit issued by the State of Washington Department of Ecology for the Goldendale Energy Center (GEC) located in Goldendale, Washington. This document, called a "statement of basis," does not contain enforceable permit conditions, only supplemental description and explanation. Enforceable permit conditions are contained in the Acid Rain Permit itself.

4.0 SOURCE DESCRIPTION

The Goldendale Energy Center will be a combined cycle natural gas-fired electrical generating facility. It will consist of a combustion gas turbine-driven generator and a steam turbine driven generator. The combustion turbine and supplemental duct burners will burn only natural gas; no backup fuel is allowed. The exhaust heat from the combustion turbine flows to a heat recovery steam generator (HRSG) to produce steam. Steam is directed to the steam turbine, which turns a steam turbine generator. Steam exhausted by the steam turbine generator flows to a cooling tower and/or air-cooled condenser, is condensed, and returned to the HRSG. The HRSG will be equipped with a 323 million Btu/hr (LHV) duct burner that will produce up to 40 MW. Since performance of the combustion turbine declines as ambient air temperature increases, the maximum duct burner contribution of 40 MW will occur when the ambient site temperature reaches its maximum (about 110 °F.) The GEC has a maximum generating capacity in the range of 247,800 kilowatts (kW) to 248,700 kW. This generating capacity is measured as the maximum continuous electric generating capacity less minimum auxiliary load.

Selective catalytic reduction (SCR) will be installed at the appropriate section of the HRSG to minimize NO_X emissions from the combustion turbine. An aqueous ammonia tank will supply the HRSG unit with ammonia for use with the SCR. An oxidation catalyst will also be installed in

the HRSG to oxidize carbon monoxide (CO) and, to a lesser extent, volatile organic compounds (VOCs) to carbon dioxide (CO_2).

Additional emission units include a 300 horsepower (hp) diesel engine, to start automatically should a demand for water for fire suppression occur simultaneously with a loss of electric power and a 536 hp (400 kW) diesel backup generator, to supply critical AC loads during emergency situations.

5.0 ACID RAIN PROGRAM REQUIREMENTS

The natural gas fired combustion engine and the auxiliary "duct burner" are one affected unit. The GEC is an "affected source," subject to the acid rain program, including the requirement to operate according to the acid rain permit, due to the presence of the natural gas fired combustion engine.

The acid rain permit requires that SO_2 allowances be no less than the total annual emissions of SO_2 from the affected unit, for the previous calendar year. Since this affected unit has the potential-to-emit thirty (30) tons per year of SO_2 emissions, the source will be required to hold a maximum of thirty (30) SO_2 allowances.

Since this unit is not coal-fired, there are no applicable acid rain NO_X emission limits, a Phase II NO_X permit application and ozone monitoring are not required.

The affected source will utilize CEMS for NO_X, and O_2, to comply with the acid rain program.

Instead of using a SO_2 CEMS, this affected source plans to provide other information satisfactory to EPA using the applicable procedures specified in 40 CFR 75 appendix D, for estimating hourly SO_2 mass emissions.

CO_2 mass emissions will be determined using an O_2 monitor according to 40 CFR 75 appendix F.

Because this unit is not a coal-fired unit and SO_2 monitoring will be met according to 40 CFR 75 appendix D, moisture measurement is not required. Additionally, because NO_X mass emission rates will be obtained according to 40 CFR 75 appendix F, volume flow rate measurement is not required, under the Acid Rain Program.

Opacity monitoring is not required for this gas-fired affected unit.

Reporting required to be performed in formats approved by USEPA or Ecology should be done according to the appropriate form located on EPA's Clean Air Market's Division webpage (http://www.epa.gov/airmarkets/forms/index.html#arp).

6.0 OTHER APPLICABLE REQUIREMENTS

Notice of Construction permit Order No. 01AQCR-2037, was issued to this source on February 23, 2001. The Order was revised on August 22, 2003, currently limits the source's potential-to-emit, as displayed in Table 1, and requires the installation, calibration, maintenance, and operation, of CEMS for NO_X, CO, O_2, Ammonia, and stack flow rate, and monitoring of the sulfur and nitrogen content of the fuel being fired in the turbine.

Table 1. Summary of maximum allowable air emissions (potential-to-emit).

Pollutant	Emissions	
Oxides of nitrogen	76.7	tons per year
Carbon monoxide	83.7	tons per year
Sulfur dioxide	30	tons per year
Volatile organic compounds	42.2	tons per year
PM_{10}	98.9	tons per year
Toxic Air Pollutants	127.6	tons per year
Acetaldehyde*	3091.1	pounds per year
Ammonia*	115,010 / 69,006**	pounds per year
Benzene*	321.6	pounds per year
Formaldehyde*	3955.9	pounds per year
PAH*	13.8	pounds per year
Propylene Oxide*	481.8	pounds per year
Sulfuric Acid Mist*	6.2	tons per year

* Toxic air pollutant with estimated emissions greater than the Small Quantity Emission Rate listed in WAC 173-460-080(2)(e).

** 115,010 pounds per year for the first 12 months and 69,006 pounds per year thereafter.

Additionally, this affected unit is subject to Title 40 Code of Federal Regulations (CFR) Part 60, Subpart Da, *Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978*, and; Title 40 CFR Part 60, Subpart GG, *Standards of Performance for Stationary Gas Turbines*.

7.0 RESPONSE TO COMMENTS

Following are Ecology's responses to comments submitted, within the Draft Phase II Acid Rain Permit comment period (3/25/02 – 4/26/02). The source of each comment is included in brackets. (Note: This section has not been updated. It exists as originally drafted.)

7.1 Columbia River Gorge National Scenic Area

Comment: Friends is concerned about the declining air quality of the Columbia River Gorge National Scenic Area. The Goldendale Energy Center may adversely impact visibility in the National Scenic Area. In May 2000, the Columbia River Gorge Commission passed an amendment to the Management Plan for the Columbia River Gorge National Scenic Area that called for greater protection of air quality in the Gorge.

Currently, the Washington Department of Ecology and other state and federal agencies are working on a plan to improve Gorge air quality. These efforts that may be jeopardized by inadequate oversight of power plant emissions. DOE should ensure that the acid rain permit for the Goldendale Energy Project will not conflict with the Management Plan, which states that "air quality shall be protected and enhanced, consistent with the purposes of the Scenic Area Act." (Friends of the Columbia Gorge)

Response: Ecology is concerned about declining air quality and is working toward a goal to improve air quality.

GEC modeled their visibility impacts during their State Environmental Policy Act (SEPA) review. These impacts were considered by the City of Goldendale prior to their 10/26/00 issuance of a Mitigated Determination of Nonsignificance.

Air quality approval to construct and operate GEC, was issued, by Ecology, as Notice of Construction Order No. 01AQCR-2037, on 2/23/02. (Note that review of visibility impacts is not regulatorily required for Notice of Construction permitting. However, ambient emission impacts were analyzed and found to be within acceptable limits.)

The Acid Rain permit does not allow any operation not previously approved by the Notice of Construction. However, it does require additional monitoring of emissions and compliance with the Federal sulfur dioxide (SO_2) allowance program.

7.2 SO_2 Emissions

Comment: Regarding the Acid Rain air permit for Goldendale Energy, I believe that the SO2 emissions figures are based on assumptions about the sulfur content of the natural gas to be combusted. However, other natural gas fired power plants are having their air permits modified because there is more sulfur in the natural gas than previously assumed. For instance, the Southwest Washington Clean Air Agency is currently modifying permits for the Mint Farm/Longview and Trans Alta/Centralia gas-fired plants to reflect the realization of the increased amounts of sulfur in the gas for firing in those plants.

Because of this recent discovery about the levels of sulfur in the gas, the Acid Rain permit should require recalculation of the SO2 allowances based on measurements of the sulfur content of the gas. (John Williams)

Response: Ecology is appraised of the issue regarding the sulfur content of the natural gas available through Washington pipelines. As currently approved by Notice of Construction Order No. 01AQCR-2037, GEC may produce up to 1 pound per hour and 4.9 tons per year of SO_2. If they wish to seek approval to emit more sulfur they must apply for a permit revision. We understand that GEC is considering whether to request such a permit revision.

As allowed by the Acid Rain regulations (WAC 173-406-106(2)(a), 11/23/94; 40 CFR 75.11(d)), SO_2 monitoring for purposes of determining allowances will occur according to Title 40 Code of Federal Regulations Part 75 appendix D.

7.3 Designated Representative

Comment: Acid Rain Permit Draft; Cover Page 1; Change address to 600 Industrial Way, Goldendale, WA. 98620.
Acid Rain Permit Draft; Cover Page 1; Change Designated Representative to Steve Royall – Plant Manager.
Statement of Basis; Page 4, Para 2.0; Change Designated Representative to Steve Royall – Plant Manager, 600 Industrial Way, Goldendale, WA. 98620, Phone 509-773-0380, Fax 509-773-4720, e-mail sroyall@calpine.com.
The Alternate Representative will be John Walter – Plant Engineer e-mail johnwa@calpine.com. (Calpine)

Response: These changes were received as part of the Revised Certificate of Representation, received April 24, 2002. This information has been updated.

7.4 Commence Operation

Comment: Acid Rain Permit Draft; Cover Page 1; Due to an unforeseen project delay, we are unable to forecast an accurate commercial operation date for the Goldendale energy Center at this time. We will contact you with an updated commercial operation date at our earliest opportunity. (Calpine)

Response: The Revised Acid Rain Permit Application, received April 24, 2002, listed the unit's commence operation date as May 2003. This date is a required element of both the application and the permit. May 1, 2003, was included as the unit's commence operation date and was used to determine the monitor certification deadline. More recently, another Revised Acid Rain Permit Application, received April 16, 2003, lists the unit's commence operation date as June 1, 2004. The Permit currently includes June 1, 2004, as the unit's commence operation date. If the date when the unit commences commercial operation changes, Condition 5.4.4 will require the designated representative to submit written notification of the actual date no later than 7 days following the date the unit commences commercial operation.

Such a change will result in an administrative permit amendment that will adjust the commence operation date (Condition 5.4.4), 45-day monitoring plan deadline (Conditions 5.4.2.3 and 5.5), 90 day monitor certification deadline (Conditions 3.7 and 3.8.1), 90-day sulfur allowance deadline (Condition 2.5), and 12-month reapplication deadline (Condition 2.7), accordingly.